IWRA Update
Newsletter of the International Water Resources Association

April 2009, Volume 22, Issue 2

Contents

Dear IWRA Friends

The celebration of the World Water Day in late March gave us an opportunity to reflect on the value of developing innovative ways for its future management. We need to reflect on the implications that economic, social and environmental management policies continue to have on water development and management. Far from being a partner in the management policies of other sectors, the water sector has been increasingly forced to be "reactive". How then can we manage the water resource under increasing uncertainties and unexpected developments? It was on this topic that the IWRA co-organised a special session during the Fifth World Water Forum in Istanbul: *Water Management beyond 2020 for a changing world*. The high expectations of the audience regarding this topic were not disappointed with the high level of the

discussions. A report on the special session is being published in the June issue of *Water International*. I invite all of you to read it and let us have your views.

The Fifth World Water Forum also gave attending IWRA members the opportunity to see old friends, meet new ones, renew old partnerships and develop new ones, all of these very promising for the future of the Association.

IWRA is launching a new programme to sponsor first-time members of the Association. Do share this information with all those who may be interested in this opportunity.

On housekeeping issues, I would like to remind you that the list of nominees for the Executive Board 2010-2012 will be published in the June issue of *Water International*. We shall also post it in our webpage (www.iwrahome.org). Once the issue of the journal is published, ballots will be sent to all paid members of the Association for their votes. The quality of the nominees is high, and there are a number of competitive races. If you are not already a member, please do join the Association and be part of the process to select Board members who will continue representing you to make ours an Association we all are proud of.

The IWRA webpage provides you with the information and the means to pay your membership to join the Association either through our webpage, through bank transfers, or directly with the Executive Office. Irrespective of the method of payment you choose, do not forget to register in the webpage so that you can have access to the electronic version of our Journal.

Paid members have also been asked to cast a ballot on the proposed amendments in the Constitution and Bylaws. I would like to take this opportunity to remind all of you who have not sent your ballots, to do so by 15 April. As in the previous case, remember that your vote does count.

Finally, I would like to take this opportunity to remind you once again how important your views and contributions are for the Association. The Executive and Editorial offices, and I as President, continue to welcome your comments and suggestions

CECILIA TORTAJADA
PRESIDENT

Obituary of Dr. Hiroshi Hori

It is with great sadness that I inform you that Dr. Hiroshi Hori, a pioneer in the water profession and Fellow of the International Water Resources Association, passed away in the early morning of 3rd March, 2009.

Dr. Hori was born in 1919 in Tokyo. He graduated from the Department of Civil Engineering, Tokyo Imperial University (now the University of Tokyo), in 1944. He went to the United States in 1955 as a Fulbright Scholar to study at the University of Illinois in Urbana. Dr. Hori joined the Electric Power Development Co. (EPDC) in 1956, and worked on the development of Sakuma Dam project with main emphasis on its environmental impacts. In 1964, he was sent by EPDC to serve as Chairman and Chief Planning Engineer of the Secretariat of the United Nations Committee for Investigations of the Lower Mekong Basin. He worked for four and a half years in Bangkok on the Mekong River Basin Plan. His work on river basin projects took him to Tanzania in 1969, Turkey from 1973-1975, and New York as the Deputy Resident Representative of the United Nations Development Programme. In 1987, Dr. Hori received the degree of Doctor of Engineering from the University of Tokyo. Prominent among his publications was *The Mekong: Environment and Development*, published in Japanese by Kokon Shoin in 1997, and in English translation by the United Nations University Press in 2000.

Dr. Hori was well ahead of his time. Already in the 1950s, almost two decades before the need for environmental impact assessment became recognized by the rest of the world, he emphasized the importance of mitigating the environmental impacts of water infrastructure.

Dr. Hori devoted a great deal of time and effort on IWRA activities over several decades. He was the Chair of the Japanese Geographical Committee of the Association for many years. His contributions to the water profession in general, and IWRA in particular, were recognized by the Association when it selected him as a Ven Te Chow Memorial Lecturer. Dr. Hori most generously provided a $50,000 gift to IWRA in memory of his wife, which is known as the *Toyoko and Hiroshi Hori Education Fund*. This Fund provides a sustainable revenue stream to support access of IWRA members in developing countries to our journal, *Water International*. He will live in our memories.

Water News

UN-Water – building collaboration in the UN system and beyond

Where minds and waters meet to make a difference

The demands on the World's water resources will continue to increase in the foreseeable future. This is an undisputed fact, linked to driving forces such as population growth, urbanization, and the inevitability to provide water, food and other goods and services for all the people of the world. Changing stresses on water resources, to the better or to the worse, are also correlated to maybe less obvious

aspects such as technological development, changing consumption and production patterns, trade policies, and socio-economic development in general. In addition, growing uncertainty is becoming an increasing planning reality – climate change and variability, volatile markets (not least for food and energy) and economic turmoil will influence the wider water sector in different but not always well understood ways.

It is also becoming painfully obvious that we will not reach the range of global development and environment targets set by the international community, most recently articulated through the Millennium Development Goals (MDG)[1]; far too many people remain in poverty, lack access to water, food and improved sanitation or do not benefit from better health. Ecosystems continue to degrade and water quality problems are escalating in many countries. Despite progress, 2015 is approaching far too fast to be comfortable, and even if we would reach the targets, hundreds of millions of people would still be left behind. In the water sector, we continuously argue that water resources play a central role in reaching all development and environment related targets, but with mixed success. Water management most emerge as an increasingly important strategic issue for development.

UN-Water was established by the Chief Executive Board of the United Nations in 2002 as a mechanism to foster strengthened collaboration on water related issues. It was given a wide mandate to focus on all aspects of freshwater, including surface and groundwater resources, the interface between freshwater and seawater and water related disasters. Water resources issues are multi faceted and there is no single actor that can claim to have a mandate to cover all aspects. This is not unique for the UN-System; the same reality is facing, for example, governments. Different ministries are in charge of water as it relates to agriculture, drinking water and sanitation, energy, industrial development etc, despite that a Water Ministry may exist. UN-Water is not a first step towards establishing a single entity on water – it is to foster close collaboration among existing agencies and programmes and thus support the UN system and its partners to deliver more comprehensive, coherent and effective policy and management solutions. In the end, this is a fundamental aspect of fostering increased effectiveness in the support to Member States.

UN-Water also contributes to the global policy debate on water-related issues through active participation in global policy fora and events and through the production of assessments and policy reports for informed decision making. It promotes an increased understanding of water-related issues through regular reporting systems, and it increasingly serves as an entry point for people seeking water-related indicators, data and information. In addition, UN-Water proactively identifies emerging issues related to global water challenges and provides a platform for UN-System strategic discussions on how to better prepare for and cope with them.

UN-Water operates through its members and non-UN partners. This is where the wealth of knowledge and experience truly exist. They operate, for example, time-bound Task Forces established to focus on priority areas or emerging issues. Such Task Forces currently focus on Indicators, Monitoring and Reporting; Sanitation; Transboundary Waters; Climate Change and Water; Country-Level Coordination; and Water and Gender.

[1] Many of the targets articulated through the Millennium Development Goals are actually recycled from earlier goals that were never achieved.

In addition, a number of programmes, hosted by member agencies, are operating under the UN-Water umbrella.

- The World Water Assessment Programme synthesizes information and data gathered from UN-Water members and presents its findings through the triennial World Water Development Reports.
- The UN-Water Decade Programme on Capacity Development enhances the coherence, credibility and integrated effectiveness of UN-Water, by strengthening its members' capacity-development programmes, particularly in developing countries and economies in transition.
- The UN-Water Decade Programme on Advocacy and Communication is responsible for mobilizing information and inputs generated by various UN-Water entities in developing advocacy campaigns for accelerating the implementation of policy actions and measures.
- The WHO/UNICEF Joint Monitoring Programme on Water Supply and Sanitation (JMP) is the official mechanism of the UN system mandated to monitor global progress towards MDG Target 7.C, *i.e.* to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.

UN-Water members recognize, however, that it is essential to move beyond the basic internal benefits of increased coordination and collaboration. To gain long-term internal and external support, it must be very clear how UN-Water adds value and contribute to overall sector co-ordination, cooperation and optimization of resources not just within the UN system but also at the global, regional and country level.

There are frequently strong calls to adopt an integrated approach to freshwater management as it offers the means of reconciling competing demands with dwindling supplies and it can provide a framework in which priorities can be set and sometimes hard choices can be made. UN-Water was established based on a vision that a truly holistic approach is necessary for a cross-cutting issue such as water, but that such an approach can never be achieved through the individual mandate of each agency operating in isolation.

For further information on UN-Water, please visit www.unwater.org

Pasquale Steduto, *Chair, Un-Water, FAO*
Johan Kuylenstierna, *Chief Technical Advisor to the Chair, UN-Water*

Solar Water Disinfection helps reduce the global diarrhoea burden

Diarrhoea is one of the leading causes of morbidity and mortality in less developed countries, especially among children aged under 5 years. Each day, about 4500 die of dehydration due to diarrhoea [1]. Interventions blocking the transmission of diarrhoea-causing pathogens, such as improvements in water supply & quality,

sanitation and hygiene, are of crucial importance to reduce the global disease burden. Water quality improvements at the point of use have been found to have a significant impact on reducing diarrhoeal diseases [2]. One method that has been successfully promoted for household water treatment in developing countries is solar water disinfection (SODIS).

The Effect of Solar Water Disinfection

Research on solar water disinfection was first conducted by Professor Aftim Accra at the American University of Beirut in the early 1980s [3]. Follow-up research at the Swiss Federal Institute of Aquatic Science and Technology (Eawag) revealed that at 30 °C water temperature, a threshold solar radiation intensity of at least 500 W/m² (all spectral light) is required for five hours for solar water disinfection to be efficient. This dose corresponds to five hours of mid-latitude midday summer sunshine. The investigations revealed that at 45 °C water temperature, a synergistic effect of UV-A radiation and temperature decreases the required exposure time to attain a 4 log inactivation of faecal coliforms by 75% [4] [12].

In the second phase of the research project, Eawag conducted field tests to evaluate various types of plastic and glass bottles, plastic bags, the influence of black and reflective support systems as well as applicability, acceptability, cost and handling aspects through users in the field. The following operating guidelines were defined for SODIS: microbiologically contaminated water is filled into transparent PET bottles of up to three litres in volume and exposed to full sunlight for six hours. Two days of consecutive exposure are needed under more than 50% cloudy skies [5].

A large body of microbiological research followed that assessed and demonstrated the effectiveness of SODIS in destroying diarrhoea-causing bacteria and viruses as well as *Giardia spp.* and *Cryptosporidium spp.* [6] - [15].

Health Impact

The health impact of consuming SODIS-treated water was first examined in Kenya in the 1990s. A study conducted among Maasai children under the age of five showed a 16-24% diarrhoea reduction and an 86% fall in cholera cases during an outbreak [16]. From 2000 to 2003, the Swiss Tropical Institute conducted an epidemiological study in Bolivia in collaboration with Eawag to assess the health impact of SODIS on children below the age of five. According to the study, SODIS reduced diarrhoea incidence by more than 35% [17]. A health impact study carried out by the Department of Community Health of the Christian Medical College Vellore in India, and by the Section for International Maternal and Child Health, University of Uppsala in Sweden, of 100 children in an urban slum in Tamil Nadu, revealed that the risk of diarrhoea was reduced by 40% by using SODIS [18]. A survey on the effects of SODIS and hygienic behaviour on diarrhoea in young children was conducted in the Kibera Slum of Nairobi among 550 households selected by random sampling. The study showed that SODIS was used by 69% of all families with young children in the area. While 15% of the children from SODIS-using households suffered from diarrhoea, 70% of young children from households that were not using SODIS were suffering from diarrhoea [19]. Less systematic project evaluations in Pakistan, Nepal, India, Kenya and Cameroun revealed a diarrhoea reduction among SODIS users of about 50%.

Promotion of SODIS in Developing Countries

Based on the insights gained during the field testing of SODIS, in 2000, Eawag/Sandec launched SODIS promotion and dissemination campaigns in developing countries. Until 2005, the SODIS promotion and dissemination programme focused on collaboration with NGOs as partners for SODIS implementation. Since then, there has been a gradual shift towards increasing collaboration with government institutions. Official institutions are directly involved in implementing SODIS projects in Pakistan, Nepal, Uzbekistan, Indonesia, Vietnam, Philippines, Bhutan, Ecuador, Bolivia, Nicaragua, Honduras, Guatemala and El Salvador. At present, more than 2 million families in 33 countries practise SODIS.

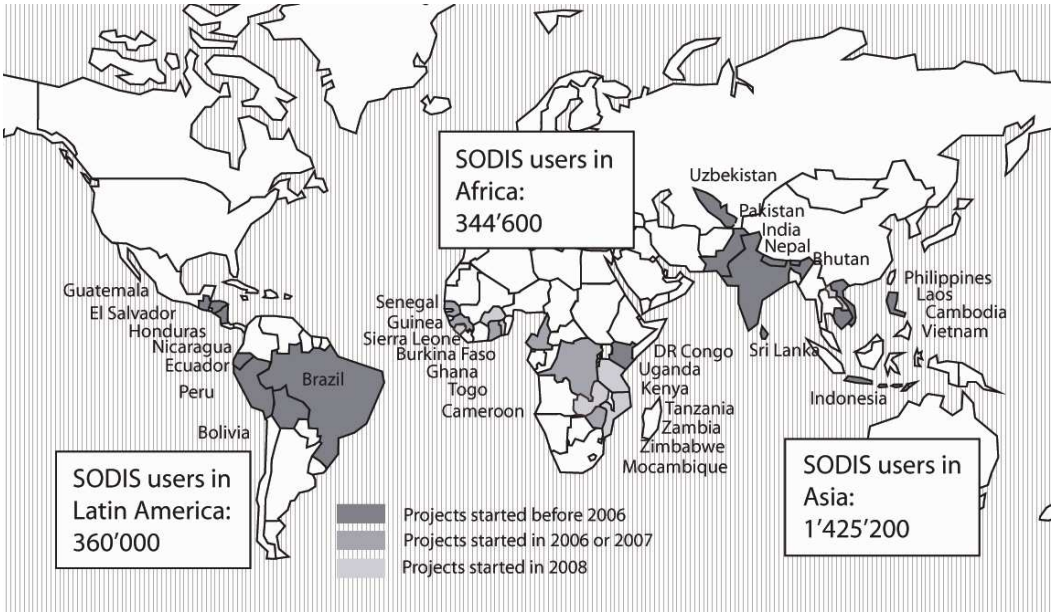

Figure 1. More than 2 million users currently practise SODIS in 33 countries.

Benefit-Cost Aspects

At the household level, a remarkable benefit-cost ratio of the SODIS application could be observed: The annual cost for the PET-bottles needed by one household for SODIS are 2.20 USD in Nepal and Pakistan and 3.20 USD in Kenya. The reduced cost of medical treatment of diarrhoea is 32 USD in Pakistan, 22 USD Nepal and 43 USD in the Kibera Slum of Nairobi! In addition, the school attendance of children and the economic productivity of adults have improved significantly.

Factors influencing the uptake of SODIS practice at grassroots level

Project evaluations of SODIS implementation in 33 countries and currently ongoing socio-scientific assessments on the effect of different promotion strategies and the uptake of the application [20] – [23] reveal that a sustainable spread of the method is dependent on the approach to its promotion. One year after project implementation, 30-80% of trained people used SODIS on a regular basis. Factors positively influencing the uptake and sustained use of SODIS at grassroots level are:

- the availability of bottles in the project area,
- the motivation and engagement of qualified promoters, providing direct training to community groups and conducting follow-up visits at the household level,
- a comprehensive promotion approach over an extended period of time covering several training and education events, thereby triggering behaviour change
- provision of information through several channels, including materials such as flyers and posters as well as mass media to support adoption of SODIS,
- involvement of government institutions such as the Ministry of Health in the training and information dissemination process.

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Introduction to the Irvine Action Framework

On December 1st to 5th, UNESCO-IHP (International Hydrological Programme) and UCIrvine (University of California, Irvine) have organized an International Conference on "Water Scarcity, Global Changes and Groundwater Management Responses" at UCIrvine.

Attended by more than 300 participants from 53 countries, the conference has been a unique opportunity of debates and exchanges, transcending political differences, on two of the major issues of our world at present, the lack of water resources and the significance of groundwater.

Three major ideas have guided our conception and design of the conference:

a) The strong interconnection and interdependency between ground, surface and atmospheric waters;
b) The necessary strengthening of governance, institutions and management organization;
c) The necessary role of communication, for an adequate information of the public to facilitate its participation in water management, on the one hand and, on the other hand, communication between policy-makers and scientists and technicians.

The conclusions of the conference have been summarized in the Irvine Action Framework, whose objective is to provide a set of recommendations for action addressed to International Institutions, such as UNESCO and other UN Agencies, National Governments, Professional Associations and NGO's, and individual practitioners.

The Irvine Action Framework is divided up into three parts:

1) An Executive Summary, which states the problems, establishes the links with previous declarations and statements such as Alicante and Kampala, and gives the major water management principles, providing the theoretical guidance to the Action Framework;
2) The Action Framework proper, as a set of recommendations for action, based on the five themes of the conference, themselves derived from the themes of the IHP Phase VII;
3) A proposal of an Agenda for the practical implementation of the Action Framework.

Professor Jean Fried, *University of California, Irvine*
Chair, Irvine Action Framework Drafting Committee

Reflections

On the Campaign to Obtain a United Nations Declaration that Fresh Water is a Human Right

It seems obvious that there is a human right to fresh water, and that is part of the problem. Too much of the commentary on the right to water is trivial; it belabours the obvious, and ignores what is difficult. This combination of simplicity and complexity is typical of water. As Canadian poet Gwendolyn MacEwan has written: *Water has no conscience and no shame.* ("Water," *The T. E. Lawrence Poems*, 1982.)

Let's start by clarifying three points:

First, water scarcity is a global problem, but the main problem is not lack of water but poor management of water. Quoting UN Human Development Report of 2006 (p. 3):

> There is more than enough water in the world for domestic purposes, for agriculture and for industry. . . . scarcity is manufactured through political processes and institutions that disadvantage the poor.

Second, in almost every country – Canada is one of the few major exceptions – the lion's share of water is for irrigating crops. Drinking water, or even all water used in households, is a small fraction of the total. However, almost everywhere, including Canada, irrigation is the largest *consumptive* use of water.

Third, water rights are different from water ethics. Rights are entitlements – something that one gets (or should get) no matter what. Ethics are moral principles that indicate what is and what is not acceptable in human affairs. Rights are legally guaranteed; ethics are morally urged. Treating your neighbour as you would treat yourself is a fine ethical norm that appears in almost all religions, but no one asserts it as a right. Trade-offs and qualifications apply to ethics, not to rights. A claim about human rights violation is a demand or redress, not for negotiations!

Water and Religion

That water rights and water ethics have existed for many millennia is beyond question. The evidence is found in religion, along with archaeological evidence that the religious precepts were observed in practice. Of the religions that originated in the Middle East, the Hebrew Bible ("the Old Testament") and the Quran in particular are filled with references to water, and, in a more or less direct way, those references created parallel bodies of religious Law that determined how water was and was not to be used. Indeed, that Law was not merely oriented toward normal conditions; it went on to regulate use during droughts and to mitigate conflicts over water.

Among other directives, the religious principles insisted that drinking water had to be provided to protect life itself and, in practice, rather beyond that minimum. If enough water was available, both Judaism and Islam give second priority to water for domestic animals. However, they diverge on subsequent rights with Jewish law favouring other household uses and Islamic law favouring irrigation. The difference is easily explained. Judaism developed in the highlands where rainfall was higher and irrigation more

difficult. Islam in contrast developed in the lowlands where irrigation rainfall was lower but easier to provide.

As the authority of states began to replace that of religion, and no doubt before, the early emphasis on equity came to be focused mainly on drinking water. A distinct class structure emerged around water with the upper, ruling classes having not only an adequate share of household water but the dominant share of agricultural water. Lower classes were left with enough water to maintain life, and to water a few animals, but not much more. Human rights to water were, in effect, defined in terms of the ability to continue to live, but not to accumulate a surplus.

Should We Establish a Modern Version of the Right to Water?

Though one can argue that the human right to water is implied by other internationally agreed rights, such as the rights to food, health, and life itself, until recently there was no formal definition of a human right to water. That situation changed partially when in 2002 the United Nations Committee on Economic, Social and Cultural Rights issued a General Comment:

> The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water ***for personal and domestic uses***. An adequate amount of safe water is necessary to prevent death from dehydration, reduce the risk of water-related disease and provide for consumption, cooking, personal and domestic hygienic requirements. (Emphasis added.)

Though strictly advisory, this statement gives us a well-crafted definition of a right. I do not, for example, see lawns mentioned, to say nothing of industry or agriculture. Poorly crafted expressions of the right to water are so broad as to golf courses the same rights as human beings. Certainly no use of water that is intended to earn income qualifies as a human right, regardless of whether it is consumptive, as with agriculture, or non-consumptive, as with hydropower. (Quantitatively insignificant exceptions might be made for home gardens and home-based industries in low-income communities.)

The critical point is that, even in the absence of formal international law, the concept that every human being deserves a quantity of water adequate to live in dignity is so widely accepted that it can be treated as what is called "soft law." For this reason, I believe that a campaign to enact a formal United Nations declaration is dangerous. The very effort contradicts the position of many people that such a right *already exists*.

Admittedly, many governments fail miserably in supporting that right, particularly for vulnerable groups in society. However, most if not all governments both agree that the right does exist and many act as if it does exist. Those that disagree would not likely sign a UN convention in any case.

An Alternative Approach

The work that is really needed is not declaring a right to water in principle but delivering the right in practice. The principle is a matter of legalities; the practice is a matter of governance. Among other things, a right to drinking water implies that the water can be obtained without personal danger, a condition of particular importance to women. Some of the water must be potable. And all the water must be affordable, which does not necessarily mean that it should be free. Indeed, much evidence

suggests that unpriced water achieves neither efficiency nor equity – but that is another topic.

The shift from principle to practice certainly does not make the task any easier but it does change its nature. Putting the point bluntly, except for the very poorest nations in the world, failed states, and for areas constrained by military occupation, any government that does not provide the 50 to 100 litres of water per person-day commonly deemed necessary for an adequate quality of life is incompetent or corrupt. The volume of water required to meet this goal is small and, compared with other governmental tasks, the costs are modest.

The starting point for governance in delivering rights is the recognition that the rationale for a human right lies in the search for equity, not for efficiency. Efficiency is of course important, but equity is the decisive criterion. Until basic rights to water are satisfied, market criteria have to be secondary.

From the position that equity is the primary goal, it is not a big step but a profoundly important one to recognize that all people to whom rights to water are granted should have a meaningful role in decisions about the application of the right. The right may be nominally satisfied with so many litres per day of water at acceptable quality, but it will be truncated if it does not also incorporate the right to participate in the choices made about when and how the water is delivered. Few of the documents on human rights to water recognize this dimension, although, ironically, some UN documents have suggested that lack of participation explains why so many goals for household water have not been achieved.

One of the few documents to specify participation is the recent *Guide on Water as a Human Right* from the World Health Organization (WHO), which states that, once established, "Communities and vulnerable groups will be empowered to take part in decision-making processes." WHO is probably over-optimistic. The fight for empowerment will have to be fought over and over again, and long after the fight to obtain rights has been won.

There are many ways in which human rights to water can be made effective and, as long as similar results are achieved, there is no reason to expect or demand identical methods in different nations with different ecologies, different traditions and different government structures. What is important is that each government indicate how it will deliver the right, and provide a transparent way of monitoring its success in doing so.

Conclusion

In sum, rather than focusing on the expensive and exhausting task of winning a UN Resolution on the human right to water, we should simply insist (strongly!) that the right already exists, and spend that money and time to ensure that the right is made effective for those vulnerable groups and individuals to which rights of any kind are seldom delivered.

Gwendolyn MacEwan is right. Water is so fundamental to our livelihoods and lifestyles, to life itself, that we often forget what a complex substance it is, and that its complexity has political as well as physical and biological dimensions. Almost any generalization about water will have many exceptions. However, as her poem went on to say, *"Water . . . always knows its way back home."*

***David Brooks**, Senior Advisor*
Fresh Water for Friends of the Earth, Canada

Shared Water- Shared Opportunities: Associated Management Principles

On 22 March 2009, international community celebrated the *International World Water Day* with the theme "Shared Water- Shared Opportunities". This year, it correctly stresses that, we all share the equal responsibility for managing the world's transboundary waters for current and future generations.

Management of transboundary waters are always challenging, both in the third world and in the rich industrial nations. Water conflicts in international watercourses around the world create serious political, economic, environmental and social instability regionally and internationally. The examples of transboundary water conflicts include Nile basin in Africa, Tigris and Euphrates in the Middle East, Aral Sea basin in Central Asia, Parana basin in South America, Ganges basin in Asia (Petrella, 2001). Promoting and implementing integrated management through transboundary cooperation could control the state of the world water and reduce water conflicts among the nations.

For achieving sustainable water resources management, *Chapter 18 of the Agenda 21*, adopted by more than 178 Governments during the *UN Conference on Environment and Development (UNCED)* in 1992, suggested integrated water resources management and transboundary cooperation and cooperative management of the shared water resources (Articles 18.3, 18.4, 18.6-18.22, 18.10, 18.27, 18.40). Agenda 21 stresses the need for transboundary water cooperation and agreements among the riparian countries for ensuring integrated management of the shared water resources (UNCED, 1992).

The *Johannesburg Plan of Implementation*, adopted in *The World Summit on Sustainable Development* (2002), also recognized integrated management of shared water resources through transboundary cooperation involving the riparian States as one of the key components for achieving sustainable development (WSSD, 2002). Effective transboundary water resources management promotes the achievement of the three key objectives of integrated water resources management (IWRM) and sustainable development: 1) the social equity, 2) economic growth, 3) environmental and ecological protection under the prevalence of good governance and public participation.

Nevertheless, absence of effective and efficient management of transboundary water resources shared by two or more riparian countries always pose a difficult threat to achieve integrated and sustainable development of the shared watercourses as well as that of the riparian countries. This problem persists in most of the transboundary river basins, aquifers and lakes, where mechanisms and institutions to manage disputes over water resources are either absent or inadequate. The need for integrated transboundary water resources management is particularly urgent in the 263 international river basins, which are shared by two or more States, e.g., Brahmaputra, Jordan, La Plata, Niger, Okavango, Senegal, Volga, Volta river basins and in which nearly half of the territory and population of the world are located. Integrated planning for efficient watershed management is hampered by the difficulties of coordinating among riparian States with diverse and often conflicting needs (UNESCO and Green Cross International, 2003).

Even though, the international community is yet to agree on a uniform mechanism/convention to manage transboundary water resources (Salman, 2007, p.638), over the years, some customary and general principles of international law related to water have become the basis of major international conventions, treaties and agreements for transboundary water resources management.

Transboundary water management principles

Following sections briefly summarize five important customary and general principles of international law applicable to transboundary water resources management that are accepted globally and incorporated in modern international conventions, agreements and treaties.

Principle of equitable and reasonable utilization

This use-oriented principle entitles each basin State to a reasonable and equitable share of water resources for the beneficial uses within its own territory.

Equitable and reasonable utilization rests on a foundation of shared sovereignty, equality of rights and it does not necessarily mean equal share of waters. In determining equitable and reasonable share relevant factors such as the geography of the basin, hydrology of the basin, population dependent on the waters, economic and social needs, existing utilization of waters, potential needs in future, climatic and ecological factors to a natural character and availability of other resources should be taken into account (*Article V of the Helsinki Rules*, Article 6 of *the UN Watercourses Convention* and *Article 13 of the Berlin Rules*). It entails a balance of interests that accommodates the needs and uses of each riparian State. This principle has substantial support in State practice, judicial decisions and international codifications (Birnie and Boyle, 2002, p.302).

The ICJ's 1997 decision concerning the Gabcikovo-Naymaros Project endorsed the theory of equitable and reasonable utilization that was incorporated in *Article 5 of the UN Watercourses Convention.* This principle is incorporated in *1966 Helsinki Rules* (Articles IV, V, VII, X, XXIX [4]), *1997 UN Watercourses Convention* (Articles 5, 6, 7, 15, 16, 17, 19), *1995 SADC protocol on shared watercourse systems* (Article 2), *2002 Sava River Basin Agreement* (Articles 7-9), *1996 Mahakali River Treaty* (Articles 3, 7, 8, 9), *1995 Mekong Agreement* (Articles 4-6, 26), *2004 Berlin Rules* (Articles 10.1, 12, 13, 14, 16), *1992 UNECE Water Convention* (Article 2.2c).

Obligation not to cause significant harm

This principle is also a part of the theory of limited territorial sovereignty (Eckstein, 2002, p.82). According to this principle, no State in an international drainage basin are allowed to use the watercourses in their territory in a way that would cause significant harm to other basin States or to their environment, including harm to human health or safety, to the use of the waters for beneficial purposes or to the living organisms of the watercourse systems.

This principle is widely recognized by international water and environmental law. However, question remains on the definition or extent of the word "significant" and how to define "harm" as a "significant harm".

This principle is incorporated in most modern international water conventions, treaties, and agreements. It is now considered as part of the customary international law (Eckstein, 2002, pp.82-83). This principle is incorporated in *1966 Helsinki Rules* (Articles V, X, XI, XXIX [2]), *1997 UN Watercourses Convention* (Articles 7, 10, 12, 15, 16, 17, 19, 20, 21.2, 22, 26.2, 27, 28.1, 28.3), *1995 SADC protocol on shared watercourse systems* (Article 2), *2002 Sava River Basin Agreement* (Articles 2, 9), *1996 Mahakali River Treaty* (Articles 7, 8, 9), *1995 Mekong Agreement* (Articles 3, 7, 8), *2004 Berlin Rules* (Articles 8, 10.2, 16) and *1992 UNECE Water Convention* (Articles 2.1, 2.3, 2.4, 3). This principle is also acknowledged by modern international environmental conventions and declarations, e.g., *1972 Stockholm Declaration of the UN Conference on Human Environment* (Principles 21, 22), *1992 Rio Declaration on Environment and Development* (Principles 2, 4, 13, 24), *1992 Convention on Biological Diversity* (Article 3).

Principles of notification, consultation and negotiation

Every riparian State in an international watercourse is entitled to prior notice, consultation and negotiation in cases where the proposed use by another riparian of a share watercourse may cause serious harm to its rights or interest. These principles are generally accepted by international conventions, agreements and treaties. However, naturally, most upstream countries often oppose this principle. It is interesting to note that during the negotiation process of the *1997 UN Watercourses Convention*, these principles, which are included in Articles 11 to 18, was opposed by only three upstream riparian countries: Ethiopia (Nile basin), Rwanda (Nile basin) and Turkey (Tigris–Euphrates basin) (Birnie and Boyle, 2002, p.319).

These principles are incorporated in most modern international water conventions, treaties and agreements, e.g., *1966 Helsinki Rules* (XXIX [2], XXIX [3], XXIX [4], XXX, XXXI), *1997 UN Watercourses Convention* (Articles 3.5, 6.2, 11-19, 24.1, 26.2, 28, 30), *1960 Indus Waters Treaty* (Articles VII [2], VIII), *1995 SADC protocol on shared watercourse systems* (Articles 2.9, 2.10), *2002 Sava River Basin Agreement* (Parts Three and Four, Article 22), *1996 Mahakali River Treaty* (Articles 6, 9), *1995 Mekong Agreement* (Articles 5, 10, 11, 24), *2004 Berlin Rules* (Chapter XI, Articles 57, 58, 59, 60) and *1992 UNECE Water Convention* (Article 10). These principles are also acknowledged by modern international environmental conventions and declarations, e.g., *1992 Rio Declaration on Environment and Development* (Principles 18, 19), *1992 Convention on Biological Diversity* (Article 27.1).

Principles of cooperation and information exchange

It is a responsibility for each riparian State of an international watercourse to cooperate and exchange data and information regarding the state of the watercourse as well as present and future planned uses along the watercourse (Birnie and Boyle, 2002,

p.322). These principles are recommended by *1966 Helsinki Rules* (Articles XXIX, XXXI), while *Articles 8 and 9 of the 1997 UN Watercourses Convention* makes these an obligation.

These principles are incorporated in most modern international water conventions, treaties and agreements, e.g., *1966 Helsinki Rules* (Articles XXIX [1], XXIX [2], XXXI), *1997 UN Watercourses Convention* (Articles 5.2, 8, 9, 11, 12, 24.1, 25.1, 27, 28.3, 30), *1960 Indus Waters Treaty* (Articles VI-VIII), *1995 SADC protocol on shared watercourse systems* (Articles 2-5), *2002 Sava River Basin Agreement* (Articles 3-4, 14-21), *1996 Mahakali River Treaty* (Articles 6, 9, 10), *1995 Mekong Agreement* (Preamble, Articles 1, 2, 6, 9, 11, 15, 18, 24, 30), *2004 Berlin Rules* (Chapter XI, Articles 10, 11, 56, 64) and *1992 UNECE Water Convention* (Articles 6, 9, 11, 12, 13, 15, 16). These principles are also acknowledged by modern international environmental conventions and declarations, e.g., *1972 Stockholm Declaration of the UN Conference on Human Environment* (Principles 13, 22, 24), *1992 Rio Declaration on Environment and Development* (Principles 7, 9, 12, 13, 17, 27), *1992 Convention on Biological Diversity* (Articles 5, 17).

Peaceful settlement of disputes

This principle advocates that all States in an international watercourse should seek a settlement of the disputes by peaceful means, in case States concerned cannot reach agreement by negotiation.

Most modern international water conventions, treaties and agreements incorporated this principle, e.g., *1966 Helsinki Rules* (Articles XXVI-XXXVII), *1997 UN Watercourses Convention* (Article 33), *1960 Indus Waters Treaty* (Article IX, Annexure F, G), *1995 SADC protocol on shared watercourse systems* (Article 7), *2002 Sava River Basin Agreement* (Articles 1, 22-24, Annex II), *1996 Mahakali River Treaty* (Articles 9, 11), *1995 Mekong Agreement* (Articles 18.C, 24.F, 34, 35), *2004 Berlin Rules* (Articles 72-73) and *1992 UNECE Water Convention* (Article 22, Annex IV). This principle is also acknowledged by modern international environmental conventions and declarations, e.g., *1992 Rio Declaration on Environment and Development* (Principle 26), *1992 Convention on Biological Diversity* (Article 27, Annex II).

Concluding remarks

If properly managed, water serves as a tool for sustainable development, peace building, and preventive diplomacy. In order to incorporate all social, political, economic, environmental, physical and cultural characteristics of an international watercourse, water should be managed based on hydro-geographical boundaries and thus not only on administrative and political boundaries. Both the *Rio Earth Summit* (1992) and *World Summit on Sustainable Development* (2002) explicitly recognized that integrated transboundary water resources management is a necessary tool for achieving sustainable development (UNCED, 1992; WSSD, 2002; Rahaman and Varis, 2008). However, absence of detail legal and institutional framework along with effective dispute resolution mechanisms and guidelines for cooperative management involving the riparian countries, have become the major obstacles for achieving effective management of transboundary water resources (UNEP, 2002).

Quite positively, the principle of equitable and reasonable utilization, obligation not to cause significant harm, principles of cooperation, information exchange, notification, consultation and peaceful settlement of disputes are widely acknowledged by modern international water conventions, agreements and treaties. These internationally accepted principles could serve as the guiding principles and provide a framework for

further dialogue among the riparian States of shared watercourses for creating effective transboundary water resources management and hence, promoting sustainable development. *2009 World Water Day* calls for exploiting shared opportunities through shared management. These principles can help guiding riparian countries to nurture the opportunities for cooperation that transboundary water management can provide.

Acknowledgement
This article is adapted from Rahaman, 2009a; 2009b. The title is partly taken from the theme for 2009 World Water Day, "Shared Water-Shared Opportunities".

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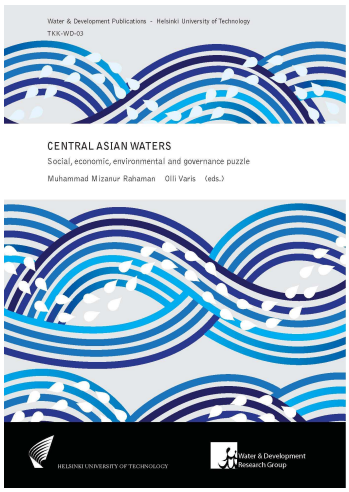
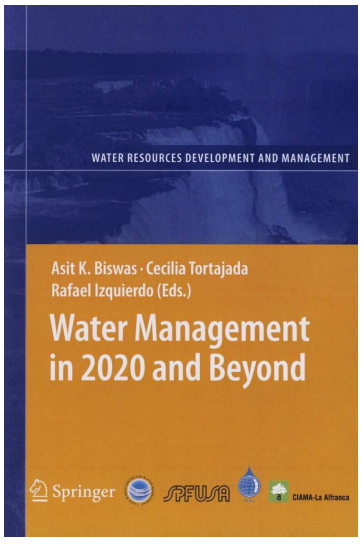
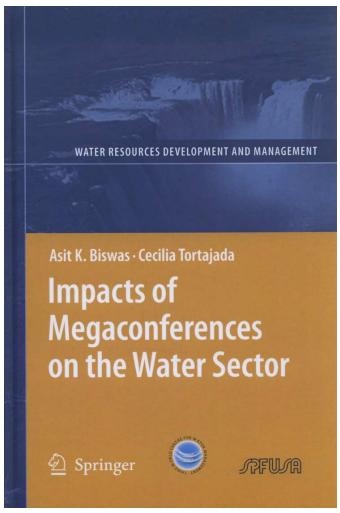
Publications



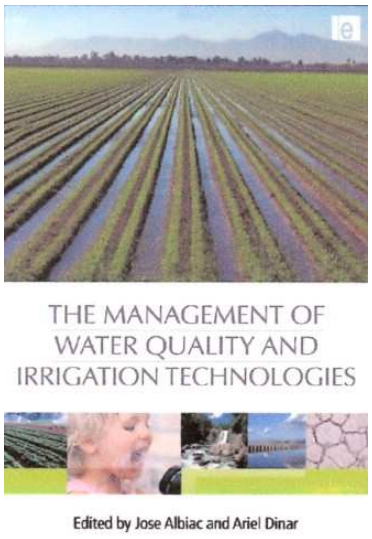
Central Asian WatersEdited by M. Mizanur Rahaman and Olli Varis, Central Asian Waters: Social, Economic, Environmental and Governance Puzzle, 2008, 148 pages. Water and Development Research Group of Helsinki University of Technology, Global Water Partnership and The Interstate Commission for Water Coordination of Central Asia jointly completed a book that scrutinizes the economic, environmental, social and governance challenges of Central Asian water resources development and management. Webpage: http://www.water.tkk.fi/global/publications/. Series: Water & Development Publications, Helsinki University of Technology. Rahaman, M.M. & Varis, O. (Eds.) 2008. Central Asian Waters: Social, Economic, Environmental and Governance Puzzle. TKK-WD-03, 148 p. Paperback ISBN: 978-951-22-9593-7. The electronic version of the complete book (in English) is available free of charge in the following pages: http://www.water.tkk.fi/English/wr/research/global/publications_central-asia.html. A limited number of print versions are available on request, free of cost, for academic and research institutions working with Central Asian issues. Contact: olli.varis@hut.fi, mizanur.rahaman@hut.fi



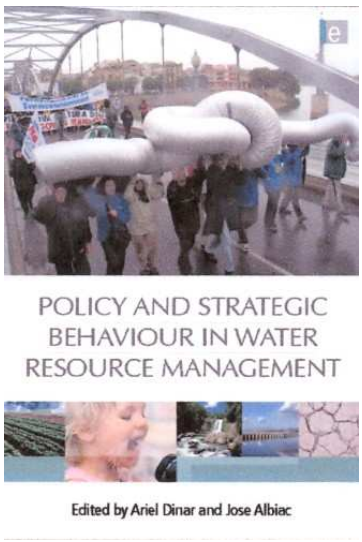
Water Management in 2020 and Beyond. Edited by Asit K. Biswas, Cecilia Tortajada and Rafael Izquierdo, Springer, 2009, 276 pages. Since the world is changing very rapidly, water management practices and processes beyond 2020 must change as well. Past forecasts and recent trends may no longer shed any meaningful light on the coming new, turbulent environment of the water sector, which will have to accommodate diversified, even opposing requirements reflecting different needs and interests of various stakeholders, political processes and institutional requirements. The situation will be further complicated by rapid technological changes, accelerated globalization, and relentless economic competition and turmoil. In this unique future-oriented book, leading international authorities discuss opportunities and challenges that the water profession may expect in the future. Many of the driving forces will still be traditional, like population and urbanization, but their implications will be very different to what have been witnessed earlier. There will be new challenges due to nontraditional drivers like globalization, free trade, HIV/AIDS, climate change, rapid technological developments and increasing intersectoral interrelationships between water, food, energy, and environmental securities. All these developments will make efficient and equitable water management more complex than eve before.



Impacts of Megaconferences on the Water Sector. Edited by Asit K. Biswas and Cecilia Tortajada, Springer, 2009, 276 pages. Since the late 1990s, megaconferences in the water-related sectors have become regular occurrences. The latest one, in Mexico City, in March 2006, is estimated to have cost a total of $205 million, and had 19,000+ participants. In spite of such huge costs and organizational efforts, not a single water megaconference has ever been seriously evaluated in terms of its overall impacts on the water sector. This book is the first pioneering study to assess the impacts of the megaconferences on water policies, programs and projects at global, regional and national levels. The results are bleak. The evaluation indicated that except for the UN Water Conference, held in Argentina in 1977, the impacts of the subsequent megaconferences have been at best marginal in terms of knowledge generation and application, poverty alleviation, environmental conservation and/or increasing availability of investments funds for the water sector.



The Management of Water Quality and Irrigation Technologies. Edited by Jose Albiac and Ariel Dinar, Earthscan, 2009, 320 pages. As countries face deteriorating water and environmental quality as well as water shortages, pollution control and the efficiency of water use become of paramount importance. Agriculture is one of the main non-point polluters of water bodies and irrigation for agriculture is one of the main consumers of water. While it is very hard to regulate pollution from agriculture, attempts have been made via economic and command and control instruments, and also through investments in technologies and ecosystems recovery. Coping with non-point pollution takes the form of both policy intervention and technology development. Likewise it is recognized that irrigation efficiency varies across countries, influenced by both technology and supporting adoption policies. Countries that lead in irrigation technology and supporting policies have certain traits in common. They face very high scarcity and are pushed to find innovative solutions, both technical and policy related. The recent multibillion investments in irrigation technologies in Spain, and similar proposals in Australia, for example, highlight the potential of irrigation technologies to cope with scarcity and water quality degradation. This book reviews all of the above issues, presents experiences in selected countries, and assesses the degree of success of alternative policies for coping with non-point water pollution and improving irrigation efficiency.



Policy and Strategic Behaviour in Water Resource Management. Edited by Ariel Dinar and Jose Albiac, Earthscan, 2009, 320 pages. Water resource management throughout the world is a very complicated issue, involving various aspects and dimensions and a well-coordinated set of policies. A well designed water policy is a multi-faceted concerted intervention, which could be specific to just one set of political and physical socio-economic conditions. A framework to analyze the interaction between policy design and implementation can assist in improving both of these in various physical, economic, and political situations. This book focuses on the interaction between policy making and strategic behaviour of policy-makers, water users, and other stakeholders, and how policy analysis and other analytical tools from the field of game theory and negotiation can improve policy design. The book presents analysis by high-level policy makers and policy analysts from various countries, to share experience regarding specific policy issues that are relevant to almost any country in the world but may have been addressed differently in each country.

Forthcoming Events

3rd ANNUAL CHINA WATER CONGRESS 2009. 23rd-24TH APRIL, 2009, TIANJIN CHINA

Water industry, supposed to be a safe haven in the tough economic time based on government contracts, now is facing critical challenges of financing constraints under the global climate of credit crunch. As a capital intensive industry, the financial upheaval and volatile could probably drive some companies with weak competitiveness out of business and lead the industry reshaping through M&A and business restructuring. In China, a stimulus package valued at RMB 4 trillion will pose both challenges and opportunities to water industry: the increasing state-owned investment may further squeeze private participation while the strong official fund can boost the market in terms of technology, equipment and service.

The CWC 2009 is thus designed to serve as a dual platform for the industry: a strategic level occasion to discuss how to turn the current crisis into future's competitiveness; a deal-making place to meet and network with potential buyers, clients & partners.

For more information, please visit http://www.chinadecisionmakers.com/water/

City: Tianjin
Industry: Infrastructure
Venue: Renaissance Tianjin Teda Hotel
Address: 29 Second Avenue Teda, Tianjin, 300457 China
Contact name: Ms. Susan Xu

Contact tel: 86 21 68407631*8012
Contact email: susanx@chinadecisionmakers.com
Contact fax: 86 21 68407632
Links: http://www.chinadecisionmakers.com/water/

Organizers: China Decision Makers Consultancy (CDMC)

ENVIRONMENT. 29-30 APRIL 2009. OLYMPIA CONFERENCE CENTRE, LONDON, UK

In April 2009 CIWEM is holding a two-day Annual Conference at Olympia Conference Centre in London that will address multidisciplinary issues across all areas of the global water and environment sector. The event includes a mix of keynote speakers, offered papers, an exhibition and many networking opportunities that will make this the key event for water and environment professionals. Exhibitors will showcase the diversity of the water and environment industry, allowing delegates to network with industry peers and experts face-to-face. Organised by the Chartered Institution of Water and Environmental Management (CIWEM). Enquiries contact Justin Taberham at e-mail: justin@ciwem.org or visit http://www.ciwem.org/events/annual_conference/

WORKSHOP ON HYDROPOLITICS AND ENVIRONMENTAL IMPACTS OF HIGH ASWAN DAM, CAIRO, EGYPT, 10–11 MAY 2009

The most well-known dam in the world during the past four decades has been the Aswan High Dam. Surprisingly, many water and environment professionals outside often Egypt know more about the High Aswan Dam, compared to any large dam in their own countries. The Workshop will answer this fundamental question based on three years of extensive investigation in three continents. The Workshop will for the first time review the hydropolitics behind the tortuous and convoluted process of financing and construction of this dam. The process was full of superpower miscalculations and rivalries, extensive political intrigues, personal animosities between various leaders, active involvement of several intelligence agencies and several other associated factors.

The Workshop will also analyse the economic, social, environmental impacts of this much-maligned dam, based only on facts, figures and scientific analyses. Based on these detailed analyses, only one conclusion is possible. The bad reputation of the Dam is primarily due to a direct vilification campaign that was deliberately orchestrated from outside Egypt. Unfortunately, some of these "mud" has stuck to the Dam, even though they have been based on deliberate falsehoods and dubious information. The real benefits and costs of the Dam will be discussed in this Workshop.

The Workshop which will be open to everyone, is sponsored by the Third World Centre for Water Management, Ministry of Water Resources and Irrigation of Egypt and Arab Fund for Economic and Social Development.

34th WEDC INTERNATIONAL CONFERENCE - WATER, SANITATION AND HYGIENE: SUSTAINABLE DEVELOPMENT AND MULTI-SECTORAL APPROACHES. 18-22 MAY 2009. UNITED NATIONS CONFERENCE CENTRE, ADDIS ABABA, ETHIOPIA

The focus of this year's conference is on 'Water, Sanitation and Hygiene: Sustainable Development and Multisectoral Approaches'. Improving water supplies and environmental sanitation has moved from being a subject only for technical specialists to one involving a wide range of people, from policy-makers to community workers, from social scientists and economists to faith-based groups and campaigners for women's rights. Governments, communities and the natural environment are complex; sustainable development requires action from various perspectives to make a lasting positive change. The WEDC International Conference is a highly respected, global platform for practitioners, decision makers, academics and researchers who lead water and sanitation innovation in developing countries. By invitation of the Ethiopian Ministry of Water Resources, this 34th WEDC Conference will take place in Addis Ababa and will showcase experience from around the world. Organised by Water Engineering and Development Centre (WEDC)
For enquiries, contact Martine Morton at e-mail: m.c.morton@lboro.ac.uk or visit http://www.wedcconference.co.uk/

MODERN METHODS IN CANAL OPERATION AND CONTROL: 5TH INTERNATIONAL TECHNICAL WORKSHOP AND STUDY TOUR, JUNE 1-11, 2009. DENVER, COLORADO, USA

Canal automation is becoming widely used to improve the operation of canal systems and to conserve water. Most new canals have an automatic control system. Additionally, many older canals are being modernized with data collection, telemetry, and control equipment that helps canal operators better manage their water. The Bureau of Reclamation's Hydraulic Investigations and Laboratory Services Group has developed a training course on canal operation and control. This course covers modern methods to upgrade the operations of existing canals, including canal automation techniques and equipment. The curriculum includes a combination of classroom discussions, equipment demonstrations, and laboratory workshops that target canal operators, water masters, engineers, and other technical staff.

The registration fee is anticipated to be US $3,800 for each participant. This includes workshop instruction, various printed materials, and transportation to the Bureau of Reclamation and back to the hotel each day, lodging for 12 nights, ground transportation during the study tour, and lunches will be provided daily.

For further information contact: Leanna Principe International Affairs, 86-43100 Bureau of Reclamation P.O. Box 25007 Denver, CO 80225 Telephone: (303) 445-2127, Fax: (303) 445-6322 E-mail: Lprincipe@do.usbr.gov www.usbr.gov

INTERNATIONAL PARTNERS' FORUM ON WATER GOVERNANCE IN THE MENA REGION: POLICIES AND INSTITUTIONS, JUNE 7–11 2009, JORDAN

InWent, Capacity Building International, Germany, and the Arab Water Council are implementing an 8-year programme (2005–2012) on capacity building in the water sector for the Middle East and North Africa (MENA) Region, with special emphasis on Egypt, Morocco, Algeria, Tunisia, Jordan, Palestine, Syria and Yemen. The first phase of this Programme ended in 2008. The Second one will cover the period 2009–2012. The Centre is providing expert advice to InWEnt on this project from its very inception in 2005, and has participated in the earlier three fora in Sana'a, Cairo and Marrakech.

The first Partners' Forum, under the Second Phase of the programme, will be on "Water Governance in the MENA Region: Policies and Institutions". This will be organised in Dead Sea Marriott Hotel, Jordan, 7-11 June 2009, where participants from the eight focus countries are being invited. The participants will represent different disciplines, and also appropriate different governmental institutions, research and training organisations, private sector and NGOs.

COURSE IN TRANSBOUNDARY WATER MANAGEMENT, SWEDEN, 8 – 12 JUNE 2009.

The two part programme will engage each participant in mentor and peer reviews on work plans and projects, discussions, expert panels and group work, role plays as well as field visits and in-depth case studies, focus on local and global challenges.
Participants represent a broad group of water resources-related stakeholders, such as governments, NGOs, media, private sector and academia.
The Closing Date for Applications is October 31, 2009. We kindly request that you send this information on this programme to any within your network who may be interested. For more information about this and other upcoming programmes, please contact Mr. Anton Earle, Project Director, Capacity Building SIWI, at anton.earle@siwi.org or Mr. Peter Qvist-Hoffman, Ramboll at peter.qvist-hoffman@ramboll.se. More information, including the Course Brochure, Application Form, and the List of Eligible Countries is also available on our website at http://www.siwi.org/sa/node.asp?node=42

2009 SINGAPORE INTERNATIONAL WATER WEEK, SINGAPORE, 23-25 JUNE 2009.

Following the resounding success of the inaugural Singapore International Water Week in 2008, the second Water Week to be held from 22 to 26 June 2009 promises to be a bigger and better event. Exhibition space has been increased and a greater number of delegates worldwide participating in the various key events of Water Week is expected.

One of the Water Week's flagship programmes is the Water Convention, which will be held from 23 to 25 June 2009 and in conjunction with the International Water Association's Leading Edge Technologies Conference (LET).

The Water Convention aims to bring together experts and practitioners from all over the world to share their ideas and experiences in water technology and infrastructure. In line with the Singapore International Water Week 2009's theme, "Sustainable Cities – Infrastructure and Technologies for Water", the Water Convention will focus on key and emerging issues including technological applications, water and health, utility practice and urban water sustainability.

The Water Convention Programme Committee 2009 is pleased to invite you to submit an abstract for an oral or a poster presentation for this prestigious event. Prospective authors are invited to submit their abstract on any of the following themes for Water Convention 2009:

- Water Technology Solutions for Today's Applications
- Managing Water Infrastructure
- Water and Health
- Planning for Sustainable Water Solutions

Abstracts can be submitted on-line at www.editorialmanager.com/iwa-conferences. For more details about Water Convention 2009, please visit: www.siww.com.sg/waterconvention.php. Abstract submission instructions and templates are also available at the website. Please send your enquiries on Water Convention and abstract submission to waterconvention@siww.com.sg.

Important Dates
Submission of abstracts: 30 November 2008
Notification of acceptance: 31 January 2009
Submission of full papers: 30 April 2009

INTERNATIONAL WORKSHOP ON WATER GOVERNANCE, SINGAPORE, JUNE 25, 2009. Within the overall context of the Singapore International Water Week (SIWW), a workshop is being organized on water governance at the Lee Kuan Yew School for Public Policy, by the School and the Third World Centre for Water Management.

It is now being increasingly recognized that the world has enough water to meet its needs, provided the available water resources are managed efficiently. However, poor water governance in most parts of the world, both in developed and developing countries, are creating serious water-related problems. These problems can be successfully solved with existing knowledge, technology and management expertise. However, because of poor water governance practices of the past have already contributed to serious water problems in most parts of the world. Most unfortunately, the governance practices are improving only incrementally in most parts of the world. If the world's water problems are to be solved, business unusual practices have to be formulated and implemented. This means a prerequisite has to be good water governance.

The proposed workshop will review the current concepts of water governance, their strengths, weaknesses and constraints, and how best governance practices can be

improved in terms of water resources management in general and urban water management in particular.

SAFETY EVALUATION AND VISUAL INSPECTION OF EXISTING DAMS INTERNATIONAL TECHNICAL SEMINAR AND STUDY TOUR, AUGUST 17-27, 2009. DENVER, COLORADO, USA, WITH SITE VISIT TO CALIFORNIA

In most countries throughout the world, interest in the safety of dams has risen significantly in recent years. Aging dams, new hydrologic information, and population growth in floodplain areas downstream from dams has resulted in an increased emphasis on dam safety evaluation as well as operation and maintenance related to the safety of dams. The registration fee is U.S. $3200 per person. Various printed materials, lodging for 12 nights (August 16-27), and transportation during the study tour is included. It is strongly recommended that individuals apply as soon as possible for visas and seek sponsorship, if necessary. **Funding is not available from the seminar organizers.** For additional information, contact International Affairs - Denver, Bureau of Reclamation, P.O. Box 25007, Denver, Colorado 80225, telephone 1-303-445-2127, fax 1-303-445-6322, e-mail inquires to Lprincipe@do.usbr.gov (Leanna Principe) or visit www.usbr.gov/international

2009 WORLD WATER WEEK IN STOCKHOLM, AUGUST 16-22, 2009, RESPONDING TO GLOBAL CHANGE: ACCESSING WATER FOR THE COMMON GOOD WITH SPECIAL FOCUS ON TRANSBOUNDARY WATERS

The Stockholm International Water Institute (SIWI) hosts the World Water Week, the leading annual global meeting place for the planet's water issues.

Hosted and organised by the Stockholm International Water Institute (SIWI), the World Water Week in Stockholm has been the annual focal point for the planet's water issues since 1991. The Week provides a unique forum for the exchange of views and experiences between the scientific, business, policy and civic communities. It focuses on new thinking and positive action toward water-related challenges and their impact on the world's environment, health, economic and poverty reduction agendas. It does so by:

- Exploring the interconnected problems of water, society, the environment and economic vitality, building capacity and charting action toward practical solutions.
- Fostering pro-active partnerships and alliances between individuals and organisations from different fields of expertise.
- Highlighting ground-breaking research, best practices and innovative policy work by stakeholders and experts around the world and from multiple disciplines.
- Reviewing the implementation of actions, commitments and decisions in international processes and by different stakeholders in response to the challenges.

By harnessing and linking best practices, scientific understanding and policy and decision-making, the World Water Week in Stockholm moves beyond rhetoric to provide real answers to the world's water, environment and development problems. The perspective is global, but the context is attuned to differences and similarities

between regions of the world, phases of development, political systems and climatic conditions. For more information, visit **http://www.worldwaterweek.org/**

INTERNATIONAL TRAINING PROGRAMME: INTEGRATED WATER RESOURCES MANAGEMENT, STOCKHOLM, SWEDEN AUGUST 10–SEPTEMBER 1, 2009, LAO PDR (PHASE 4), FROM NOVEMBER 30 – DECEMBER 11, 2009.

The programme will engage each participant in mentor and peer reviews on work plans and projects, discussions, expert panels and group work, role plays as well as field visits and in-depth case studies. Participants represent a broad group of water resources-related stakeholders, such as governments, NGOs, media, private sector and academia. The programme consists of 5.5 week scheduled training distributed in two different phases, 3.5 week training in Stockholm, Sweden, from August 10–September 1, 2009, and 2 weeks training in Lao PDR, from November 30 – December 11, 2009. In addition to the scheduled training, participants will undertake an Individual Project, on a part time basis in their home organisations, starting 6 weeks before the training in Sweden and to be completed within 8 weeks after the regional training. (see the course brochure for complete information). The Application should be submitted to the appropriate Swedish Embassy/ Consulate at the latest on **March 13, 2009.** Download: Course Brochure, Application Form, List of eligible countries

More information including the above documents are also available on our website at http://www.siwi.org/sa/node.asp?node=41.

For more information please contact: Mr. Peter Qvist-Hoffman, Ramboll: peter.qvist-hoffman@ramboll.se and Mr. Anton Earle, SIWI: anton.earle@siwi.org

The Swedish International Development Cooperation Agency (Sida) will cover both the participation fee and accommodation costs. The international travel cost to and from Sweden is not covered by Sida. The participants shall find funding themselves and make arrangements for their return travel between their home country and Stockholm Arlanda airport. Sida pays for international travel costs in connection to the regional training (Phase 4) in Lao PDR and Ramboll Natura will arrange for the participants´ travel. Visa fees, domestic travels in their home country and local airport taxes are not covered by Sida. Personal expenses are not included.

Eligible Countries: Albania Angola Bangladesh Bolivia Botswana Cambodia China Colombia Croatia Georgia Honduras India Indonesia Iraq Jordan Kenya Kosovo Laos Madagascar Malawi Montenegro Mozambique Myanmar Namibia North Korea Peru The Philippines Serbia South Africa Sri Lanka Tanzania Thailand Uganda Vietnam West Bank and Gaza Zambia Zimbabwe (people from public authority are not eligible).

INTERNATIONAL WORKSHOP ON WATER PRICING, BEIJING, 18–19 SEPTEMBER 2009

The International Water Resources Association, the Center for Water Resources Research, and the Institute of Geographical Sciences and Natural Resources Research

of the Chinese Academy of Sciences, are organizing an International Workshop on Water Pricing, in Beijing, 18-19 September 2009.

The workshop will focus on social, economic, political, legal and institutional aspects of water pricing in both urban areas and in agriculture. Presentation topics may include, inter alia, water pricing for irrigation and wastewater collection and treatment, water rights, water transfers, and public-private partnerships.

Workshop chairs
LIU Changming (IGSNRR, CAS)
Cecilia Tortajada (IWRA President)

International Program Committee
XIA Jun (IGSNRR.CAS), Co-chair
James Nickum (Japan), Co-chair
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INTERNATIONAL FORUM ON WATER RESOURCES AND SUSTAINABLE DEVELOPMENT, 22-24 SEPTEMBER 2009, WUHAN UNIVERSITY, CHINA

The Academicians' Water Resources Forum is an academic activity organized every two years by the Division of Civil, Hydraulic and Architecture Engineering of the Chinese Academy of Engineering (CAE). All academicians and top-level scholars in the area of water resources in China are invited to participate in this biannual forum.

The 3rd International Forum on Water Resources and Sustainable Development, which will be held at Wuhan University during 22-24 September 2009. This time overseas delegates will be invited to participate alongside the Chinese academicians and domestic delegates. The forum will be jointly sponsored by Chinese Academy of Engineering and Ministry of Water Resources of Peoples Republic of China. Almost all top-level academic institutes with water resources programs will participate in the forum. More than 30 academicians of the CAE and many other top Chinese scholars, including Mr. Xu Kuangdi, the president of CAE, and Mrs Qian Zhengying, the former Vice Chairman of the Chinese People's Political Consultative Conference, will be invited to participate. In addition, several international research institutes and organizations will engage in the preparation and organization of the forum, such as the International Association of Hydraulic Engineering and Research (IAHR), the

International Commission on Irrigation and Drainage (ICID), and the International Water Resources Association (IWRA).

Venue: Hongyi Hotel (4-star, Wuhan University International Academic Exchange Center) 136 Donghu Road, Wuchang, Wuhan 430071, P. R. China.

Sponsors: Chinese Academy of Engineering (CAE) and Ministry of Water Resources, Peoples Republic of China. Organizers: Division of Civil, Hydraulic and Architecture Engineering, CAE; Wuhan University (WHU); Chinese Hydraulic Engineering Society (CHES); and Changjiang Water Resources Commission (CWRC). Co-Organizers: International Association of Hydraulic Engineering and Research (IAHR); International Commission on Irrigation and Drainage (ICID); International Water Resources Association (IWRA); International Water Management Institute (IWMI) Ohio State University (OSU); and China Society for Hydropower Engineering (CSHE)

Key Dates:
March 15, 2009 Deadline for Submission of Abstracts
June 30, 2009 Deadline for Submission of full papers
September 22, 2009 Registration
September 23, 2009 Opening ceremony, keynotes
September 24, 2009 Panel presentations
September 25-28, 2009 Excursion (TBC)

For more information, visit http://2009.waterlab.cn/en/index-en.html

HYDRO 2009 - INTERNATIONAL CONFERENCE AND EXHIBITION
26 Oct 2009 - 28 Oct 2009: Lyon, France
HYDRO 2009 will bring together planners, developers, owners and operators, environmental specialists, financiers, researchers, manufacturers and equipment suppliers for an exchange of expertise which will be constructive in furthering well planned hydropower development worldwide. As always, much emphasis will be placed on meeting the needs of the less developed countries, this will be reflected strongly throughout the programme.
More information: http://www.hydropower-dams.com/hd_72_0.htm

III INTERNATIONAL EXPERT'S MEETING ON WATER QUALITY MANAGEMENT, ZARAGOZA, SPAIN, 9-11 NOVEMBER 2009

During the past decade, considerable global attention has been given on potential physical scarcities of water to meet various global needs in the coming years. Many have argued that by 2030, much of the world's people will be living in regions having serious water stress. Research conducted at the Third World Centre for Water Management indicated that this scenario is incorrect. The world has adequate water, if this resource can be properly managed. If the world faces a water crisis in the future, this will most likely occur not because of physical scarcities of water, but due to continued neglect of water quality. According to the work carried out by the Centre, only about 10% of the point sources of pollution in Latin America are at present adequately treated and then disposed of in an environmentally safe way. The situation is likely to be similar in developing Asian countries, and probably somewhat worse in Africa. The non-point sources of pollution in the developing world are now basically neglected. Consequently, water bodies in developing countries in and around urban

centres are heavily contaminated. Appearance of dead zones in estuaries of major rivers, even in developed countries, like the Mississippi in the United States, has already became a most serious issue because of non-point sources of pollution. Despite considerable rhetoric during the past decades, water quality management is still not receiving adequate attention. The Workshop will consider different aspects of water quality management from different parts of the world, from different perspectives, including emerging issues like endocrine disruptors. It will consider social, economic, environmental, legal and institutional aspects of water quality management, both of the present and the future. The governance aspects of water quality will receive special attention. The Workshop is being sponsored by the International Centre for Water and Environment (CIAMA), Zaragoza, Spain, the Third World Centre for Water Management and the International Water Resources Association.

INTERNATIONAL WORKSHOP ON GOVERNANCE OF TRANSBOUNDARY WATER BODIES OF LATIN AMERICA (RIVERS, LAKES AND AQUIFERS), NOVEMBER *22–26, 2009*, CAMPO GRANDE, BRAZIL

It has been fashionable in recent years in certain circles to speak of water wars and political and social conflicts over water. The hypothesis of this project will be that through proper inter-institutional coordinating mechanisms, the countries sharing the same water bodies can benefit significantly more through cooperation rather than through conflicts. Even though management of transboundary rivers, lakes and aquifers are considered important at present, a comparative and objective study of the efficacy of the institutions to manage such basins efficiently is still conspicuous by its absence. It is thus necessary to conduct a systematic and comprehensive objective analysis of the existing transboundary river and lake basins organisations and transboundary aquifers management institutions to determine their relative successes and failures, and the reasons thereof. Through this process, a community of good practices for sustainable water resources management can be reliably identified, and their potential replicability could be considered for case-specific situations of transboundary water management in Latin America.

During the workshop, 8–10 major transboundary freshwater bodies will be analysed from the appropriate Latin American countries. While considerable efforts have been made in the past to analyse the transboundary water bodies of Asia, Africa, Europe and the Middle East (for example, Ganges, Indus, Mekong, Salween, Nile, Zambezi, Rhine, Danube and Jordan), commensurate emphasis has not been placed on the study of the Latin American transboundary water bodies. To the extent these have been studied in Latin America, the primary focuses have been on the major rivers like the Amazon or the Plata: smaller transboundary rivers, lakes and groundwater bodies have been mostly neglected.

Leading experts, who have first hand knowledge and experience of the specific cases, are being specially invited to prepare the case studies. Once the case studies are completed, the authors and some selected experts and policy-makers will be invited to a workshop to discuss and critically review all the case studies, and draw some conclusions. This may help to develop a road map for managing transboundary water bodies more successfully in the future. The case studies will then be revised by the respective authors, in the light of the discussions at the workshop. A synthesis of all the case studies will be prepared, especially in terms of identifying the best practices and how these can be replicated and promoted successfully in the region in the future.

A prestigious international publisher, with an extensive global distribution network, will be selected to publish and distribute the resulting book. In addition, summaries of the case studies will be published in major international journals for wider dissemination.

The Workshop is being sponsored by the Third World Centre for Water Management, National Water Agency of Brazil and International Water Resources Association.

NEW PROGRAMME TO SPONSOR FIRT-TIME MEMBERS OF IWRA

Do you know someone who might be interested in becoming an IWRA member?

IWRA has a programme to sponsor first-time members from developing countries for one year to show them the benefits of joining the Association. The sponsorship includes membership fee and access to our Journal, *Water International*, for one year.

If you know someone who is interested, please send a formal request to the Chair of the Membership Committee, Dr. Gunilla Björklund through the Executive Office (e-mail: iwra-office@wisa.org.za). The request should indicate the name of the person, their affiliation and title, and a brief description of their work on water. CVs are appreciated, but not necessary. Both professionals and students from developing countries are eligible for this programme. The Membership Committee will evaluate the requests.

We are looking forward to welcoming more members to the IWRA family!

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